5.0 Discussion and Analysis

This section offers summary comment and analysis of the institutional framework supporting MPAs in Puget Sound. Additionally, system-wide evaluation of the diverse set of MPAs identified in this study are presented, particularly with respect to the types, categories, distribution, size, protection levels and various site management characteristics.

5.1. Summary Analysis of Institutional Arrangements

Section 4.0 focused primarily on the MPA-supporting programs of five state government institutions and two federal agencies, while also touching on the roles of Treaty Tribes, local government and select non-governmental organizations. What can be said about the *collection* of these institutions and programs with respect to the development and management of MPAs in Puget Sound?

Fragmented Approach

The existing institutional structure to support marine protected area establishment and management in Puget Sound is fragmented and complex. Many organizations are involved in governing and managing resources and activities in marine areas. Additionally, MPA management is sometimes even further partitioned within a single resource agency. For example, the management and protection of various marine species or habitats at a single location may be handled at WDFW by multiple divisions or resource managers.

At the state government level, the Washington Departments of Natural Resources, Fish and Wildlife and Ecology, and the Washington State Parks and Recreation Commission all share some responsibility for management of marine areas and activities, including the establishment of protected areas. Among federal agencies, the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration are also involved in the establishment and management of existing MPAs in Puget Sound. Treaty Tribes cooperatively manage fish and shellfish resources, and local governments manage parks, protected areas and shoreline development. In the private sector, various organizations including land trusts, marine laboratories, educational institutions and others have an interest and involvement in protecting intertidal areas.

MPA Development Without Guiding Policy

The diverse set of protected intertidal and subtidal areas found in Puget Sound have developed incrementally and inconsistently into a patchwork of sites that vary considerably in designation, purpose, resource protection offered and level of management provided. This assortment of State Park areas, marine preserves, Natural Area Preserves, Natural Resources Conservation Areas, National Wildlife Refuges, Wildlife Areas and other MPA designations developed, collectively, without any particular systematic rationale or coordinated strategy.

This piecemeal protected area development evolved in the absence of any clear policy or coordinated program to guide the region's establishment and management of MPAs. Moreover, of the many agencies involved, none have a distinct or leading role with respect to MPAs. As a result, establishment of existing MPAs has historically not been based on any kind of coordinated planning to protect Puget Sound's marine species, habitats and ecosystems. System-wide objectives for MPA development have never been clear, and designations have occurred without centralized guidance regarding the identification, design, financing, designation, management, monitoring and evaluation of MPAs.

Interagency Cooperation vs. Independent Efforts

Divisions of jurisdictional authority, management responsibility, and intertidal land ownership can tend to isolate management efforts at protected areas. Many protected areas are designed and managed primarily by a single agency, department or organization. Because these entities have independently developed MPAs needed to fulfill their separate mandates, such efforts are therefore based largely on their own programs, skills, experience, legal authority and priorities.

However, there are also a number Puget Sound MPAs established with a greater extent of interagency cooperation. The Titlow Beach Marine Preserve, which is really the meeting of a city park area and a state marine preserve, is a good example of interagency cooperation between the City of Tacoma and WDFW. As a result of multi-stakeholder planning and development, state harvest closure regulations have been enacted by WDFW, while park supervision and program development is coordinated by the Metropolitan Parks District of Tacoma and other involved groups. This interagency cooperation has helped create an MPA that is better protected and supported than would be the case were either party to develop a such a site independently.

Another example of a strong interagency partnership is found at the Padilla Bay National Estuarine Research Reserve (NERR). The NERR system is a federal program, administered by NOAA, that supports state level site operations. At Padilla Bay NERR, this partnership brings about local site management, stewardship, research and monitoring that is supported and guided by federal funding, oversight and other support.

Numerous other interagency agreements have been put in place at Puget Sound MPAs for purposes of streamlining operations and addressing human and financial resource limitations. For example, site maintenance and supervision duties are often shared between DNR and State Parks at certain parks and protected areas. WDFW and the USFWS have agreements in place regarding the supervision and management of their abutting protected areas on Protection Island. Many other examples of such cooperation exist, and are discussed individually throughout Volume 2, MPA Site Profiles.

Complexity and Confusion

Considering the multiple institutions, laws, programs, jurisdictions and shared responsibilities, as well as other complexities described above, it is perhaps not surprising that the general level of understanding about Puget Sound MPAs appears to be low. In fact, based on observations gathered during the course of research and interviews conducted for this study, widespread confusion might best describe this state of knowledge.

Several points of confusion stand out in particular, including protected area terminology, the roles and responsibilities of agencies, and the rules and regulations in place at MPAs. With so many different terms applied to protected areas in Puget Sound, it is confusing for the public as well as resource managers and other practitioners in the field to understand the differences between them. For example, there are many types of designations termed a “preserve,” including WDFW Marine Preserve areas, DNR’s Natural Area Preserves, and FHL’s Marine Biological Preserve.

Confusion also appears to be common concerning the specific roles and responsibilities of various agencies and institutions at state, federal, local and tribal levels. Multiple entities have authority to create MPAs which are tied to their individual mandates and necessary for the management they conduct. However, since these multiple authorities can apply to the same physical location, regulations for MPAs can be confusing or not completely understood. This often appears to result when various MPA regulations adopted by multiple authorities are not coordinated or communicated clearly to the public.

Diversity of Options — MPAs as a Multi-Institutional Tool

However partitioned and complicated the institutional framework appears to be when viewed in the context of MPA development and management, it does offer a diverse set of marine area protection mechanisms and tools. Among the various entities involved, adequate authority exists to create MPAs ranging from small strictly-regulated no-take or no-intrusion areas, to larger multiple use protected areas providing for the management of many uses. As such, MPAs are a tool available to all agencies and organizations that may be useful for a variety of management functions.

New developments in Puget Sound indicate that the diverse possibilities for creating MPAs are beginning to be investigated. The Washington Marine Protected Area Work Group has brought together representatives of multiple agencies to design a State process to identify and establish a network of MPA sites through existing agencies and programs. WDFW is considering the establishment of no-take MPAs at newly proposed sites in Puget Sound, and a new agency-adopted wild salmonid policy contains a recommendation for the creation of an MPA strategy to include reserves for herring spawning habitat (WDFW 1997b). WSP&RC is in the process of developing an underwater parks program that may hold potential for new MPA designations. A Citizen's Advisory Commission convened by the offices of U.S. Representative Jack Metcalf and U.S. Senator Patty Murray has presented a proposal for protecting the marine resources of the Northwest Straits, that calls for establishment of a system of MPAs. Finally, San Juan County's Marine Resources Committee has developed and implemented a system of voluntary MPAs, the first of such kind in Puget Sound. With so many involved parties working at all levels of government and within the private sector, it would seem there are many opportunities to coordinate efforts and form partnerships directed at improving the overall development and management of MPAs in Puget Sound.

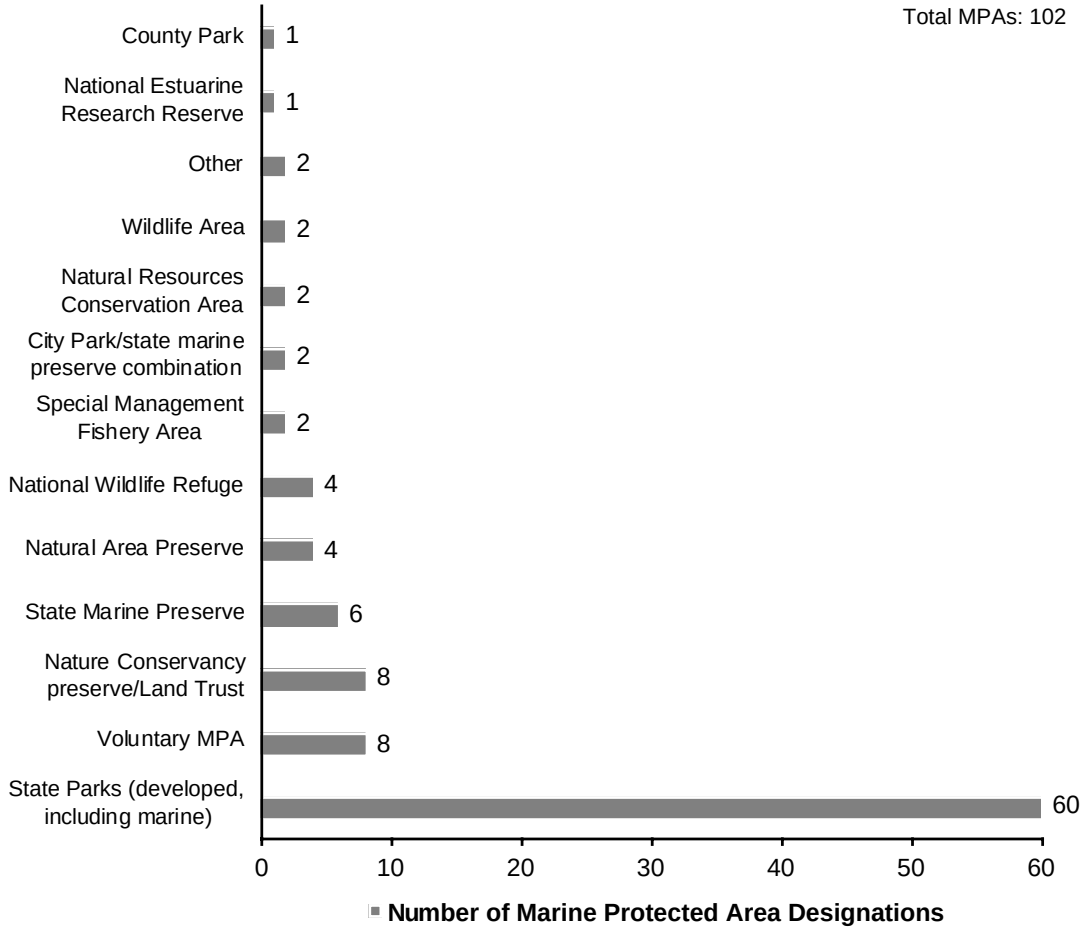
5.2 MPA Site Observations and Analysis

This section provides some system-wide views and observations of the diverse collection of MPAs. MPA summary statistics on designation types and categories are presented, as well as discussion and analysis relating to MPA geographic distribution, site size, levels of protection, resource protection approach, and site management. Through these observations, a more complete picture of MPAs in Puget Sound emerges.

5.2.1 MPA Designation Types

The MPAs identified in this study represent a variety of designation types (**Figure 1**). State Parks, with 60 developed sites, represent by far the largest group of MPAs identified in this study. Other designation types include voluntary MPAs (8 sites); land trust preserves (8 sites); state marine preserves (6 sites); Natural Area Preserves (4 sites); and National Wildlife Refuges (4 sites). Also identified are the following designations: local parks (3 sites); special management fishery areas (2 sites); Natural Resources Conservation Areas (2 sites); Wildlife Areas (2 sites); a National Estuarine Research Reserve; a state Seabird Sanctuary, and a Marine Biological Preserve.

Figure 1. Number of Puget Sound MPAs by Designation Type



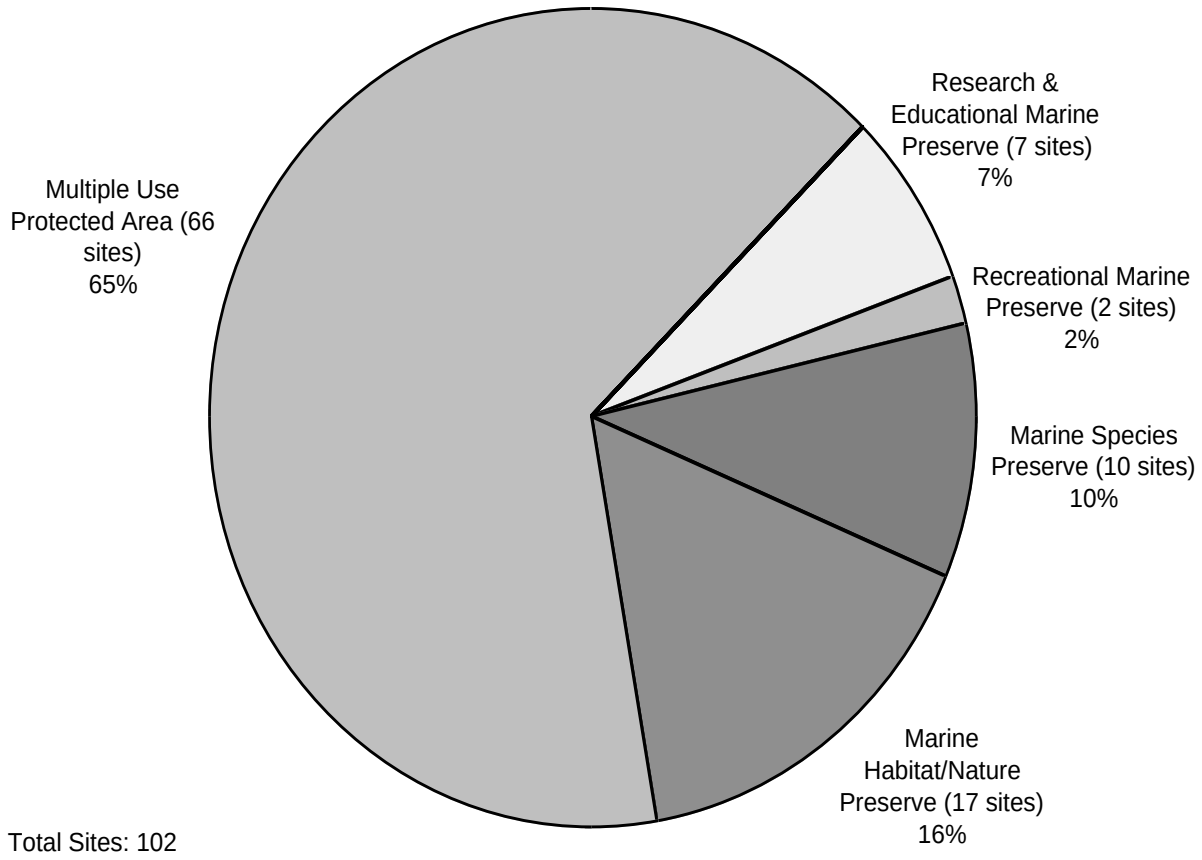
The percentage of MPAs by institution is as follows: 76% state, 11% local government, 8% private sector, and 5% federal. Because over half of the sites are State Parks, and because of this study's primary focus on state institutions, more than three-fourths of the MPAs identified are state-designated. These percentages would change if all private sector and local government intertidal MPAs were identified.

5.2.2 MPAs by Category

Section 3.1.2 presented a set of categories used to organize MPAs into groupings based on the primary objectives or functions of sites. Existing MPAs were assigned to one of five categories: 1) Research and Educational Marine Preserves; 2) Recreational Marine Preserves; 3) Marine Species Preserves; 4) Marine Habitat/Species Preserves; and 5) Multiple Use Protected Areas.

Figure 2 shows the percentage of MPAs by category. Multiple Use Protected Areas (which include 60 State Park areas) represent nearly two-thirds of the MPAs. A diverse collection of Marine Habitat/Nature Preserves make up 16% of the sites, while the three remaining categories each represent 10% or less of the sites.

Figure 2. Puget Sound Marine Protected Areas by Category



5.2.3 Geographic Distribution of MPAs

The 102 MPAs are found in roughly equal distribution between northern and southern Puget Sound counties (Table 20, Map 2A). The San Juan Archipelago (San Juan County in Table 20), stands out as the area containing the greatest concentration of MPAs and widest variety of designation types. Conversely, there are very few MPAs found along the Strait of Juan de Fuca.

Table 20. Number of Puget Sound MPAs by County

County	Number of MPAs	Designation Types
Clallam	3	1, 6, 12
Island	7	1,
Jefferson	10	1, 5, 6, 13
King	3	1, 3
Kitsap	9	1,
Mason[a]	12	1, 4, 5
Pierce	7	1, 8, 10
San Juan[b]	38	1, 2, 3, 4, 6, 7, 9, 13
Skagit[c]	5	1, 10, 11
Snohomish	2	1, 8
Thurston[d]	3	1, 6, 9
Whatcom	3	1, 3, 5
Total:	102	

Designation types:
1. State park or marine state park (developed)
2. Voluntary MPA
3. Nature Conservancy/Land Trust preserve
4. State marine preserve
5. Natural Area Preserve
6. National Wildlife Refuge
7. Special Management Fishery Area
8. City park/state marine preserve combination
9. Natural Resources Conservation Area
10. Wildlife Area
11. National Estuarine Research Reserve
12. County park
13. Other

Notes:
a. Includes one MPA partially located in Thurston County.
b. Includes one MPA partially located in Skagit County.
c. Includes one MPA partially located in Whatcom County, and another MPA partially located in Snohomish and Island Counties.
d. Includes one MPA partially located in Pierce County.

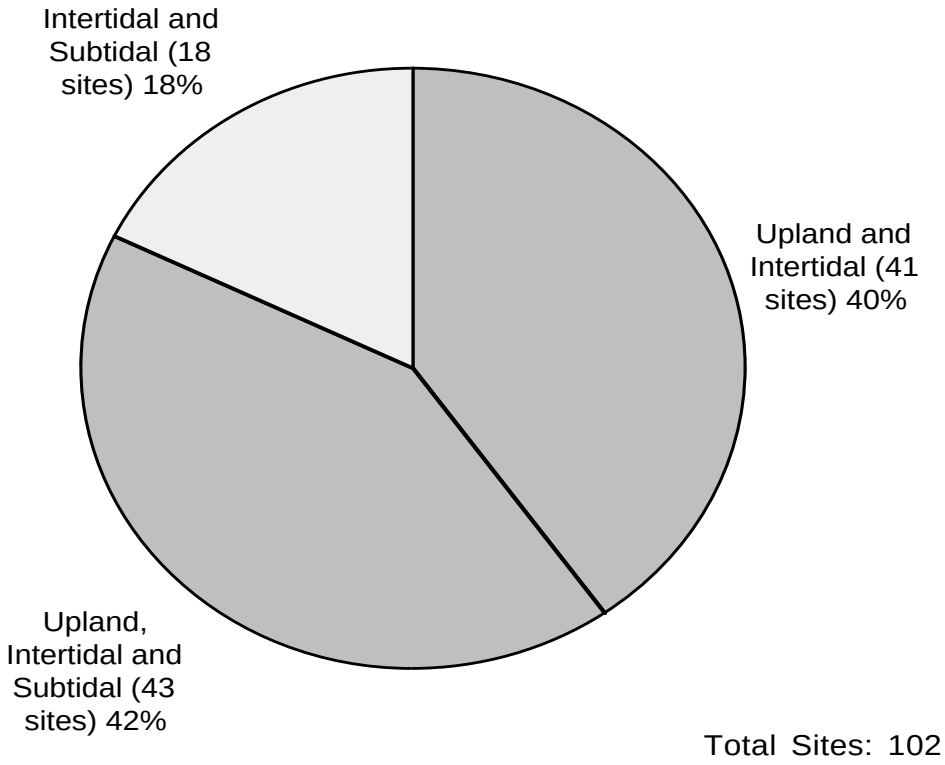
Land-Attached MPAs Predominate

It is significant to note that the majority of Puget Sound MPAs (84 of 102 identified sites) are part of upland protected areas (**Figure 3**). In most cases, the upland portions of these sites are far larger than fringing intertidal and marine components. The majority of these predominantly upland sites are the sixty designated State Parks with tidelands, but other examples are Padilla Bay National Estuarine Research Reserve and Edmonds Underwater Park which contain larger marine components than upland.

Not surprisingly, primary management focus at many of these upland-dominated sites is often directed toward land-based resources or activities, with less or little specific attention on marine components. This is especially true where terrestrial rather than marine features or values have provided the primary basis for site designation. This status appears consistent with world wide observations that many MPAs developed initially from small extensions of terrestrial protected areas and models (Agardy 1994a; Gubbay 1995).

Only 18 MPAs (18%) are comprised exclusively of intertidal and subtidal area, representing marine sites designated in their own right (**Figure 3**). All of these sites, however, are adjacent to shorelines, where there is greatest pressure on marine systems from human activities. Thus, Puget Sound has as of yet no examples of exclusively subtidal MPAs.

Figure 3. Percent of Sites with Upland, Intertidal and/or Subtidal Protection



5.2.4 Variability of MPA Marine Acreage

Because a majority of Puget Sound MPAs are unmeasured or lacking clear marine boundary information, this study is unable to report the exact size of most sites and of the entire protected area system. However, some general observations can still be made.

Based on available data and estimates, the size of Puget Sound MPAs vary dramatically. Sites range from the extremely small (such as 2 and 3 acre Nature Conservancy island preserves with narrow intertidal zones) to the very large (such as the San Juan County/Cypress Island Marine Biological Preserve, encompassing more area than all marine waters in San Juan County).

With the exception of a few sites, it is apparent that the majority of Puget Sound MPAs contain relatively small subtidal marine components. The most strictly regulated subtidal MPAs (those with legally-established harvest closures for food fish and shellfish) tend to be small areas ranging from approximately 10 to 200 acres and located along short stretches of shoreline.

As an exception to the small size of most subtidal MPAs, there are three large subtidal sites that overlap many MPAs. These consist of two special management fishery areas in the San Juans (commercially closed sea urchin and sea cucumber zones in Haro Strait and San Juan/Upright Channel), and the San Juan County/Cypress Island Marine Biological Preserve. While encompassing the greatest amount of subtidal area, these sites provide for only limited and specific harvest closures or conditional restrictions.

MPAs containing some of the largest marine area are those with significant intertidal acreage. These include sites such as the Padilla Bay National Estuarine Research Reserve (approximately 8000 intertidal and 200 subtidal acres), the Skagit Wildlife Area (13,000 acres, primarily intertidal) the Nisqually National Wildlife Refuge (2973 acres, a significant portion intertidal), and several of the larger State Parks with extensive tidelands.

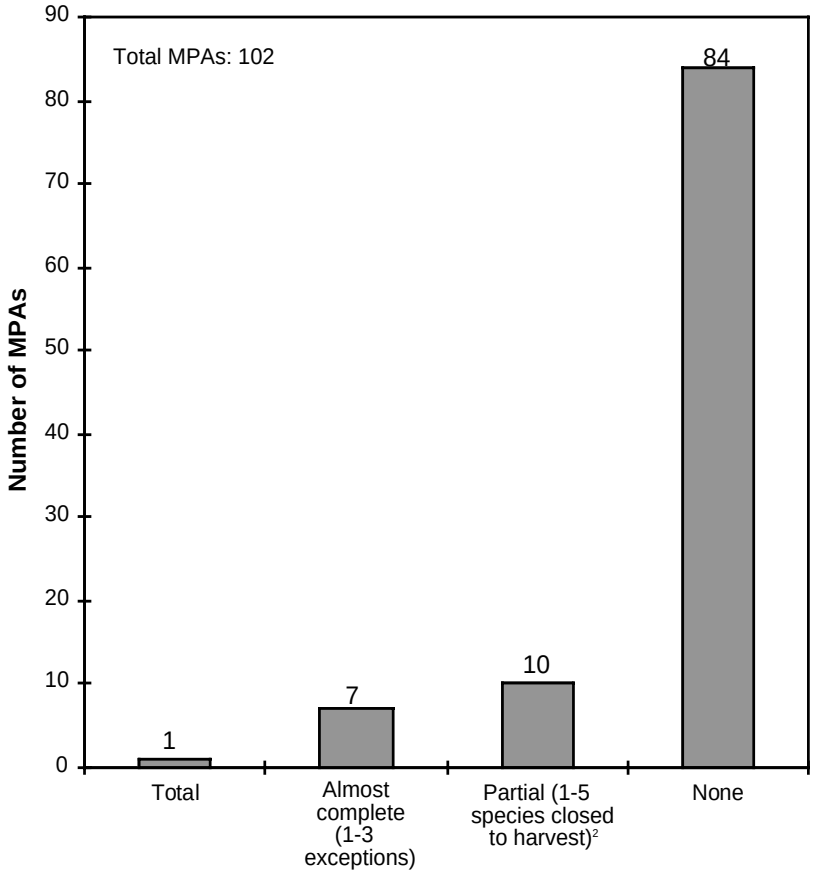
5.2.5 Harvest Closure Protection Levels

A system-wide analysis of the protection levels provided by MPAs in Puget Sound, and specifically the extent to which the extraction of marine life is prohibited, yields interesting and important results. These results are discussed next.

Protection of Fished Species or Species Groups

Perhaps the most striking finding is that only 18 (18%) of the 102 MPAs identified in this study provide fished species (WDFW classified food fish, game fish and shellfish) with protection from harvest (**Figure 4**). From this, it can be seen that the vast majority of MPAs (84 out of 102) do not restrict fishing activities. It should be noted, however, that access restrictions at some of these sites provide indirect protection from non-tribal harvest activities.

Figure 4. Extent of Protection from Harvest for Classified[1] Species Provided by MPAs in Puget Sound



[1] Classified refers to those species that have been designated by the Washington Department of Fish and Wildlife (WDFW) as foodfish or shellfish.

[2] Includes eight voluntary bottomfish recovery areas.

Only one MPA in Puget Sound, the Edmonds Underwater Park, provides a complete closure on the take of fished species. Since the city of Edmonds also prohibits the take of any marine life (plant or animal, classified or unclassified), the site has the added distinction of being Puget Sound's only no-take MPA. With the possible adoption in early 1998 of new proposed MPAs, WDFW may establish additional no-take areas.

The next most-protected MPAs, with respect to harvest closure of fished species, seven WDFW designated marine preserves (at Sund Rock, Titlow Beach, and the five San Juan Island Marine Preserve sites). All of these sites feature harvest closures for almost all food fish and shellfish species or species groups. In all cases, exceptions have been made for salmon fishing.

The remaining MPAs prohibiting harvest are targeted at the protection of specific species or species groups. Included here are the eight voluntary bottomfish recovery areas of San Juan County, the two WDFW-established special management fishery areas closed to commercial harvest of sea urchins and sea cucumbers, and the Tongue Point Marine Life Sanctuary.

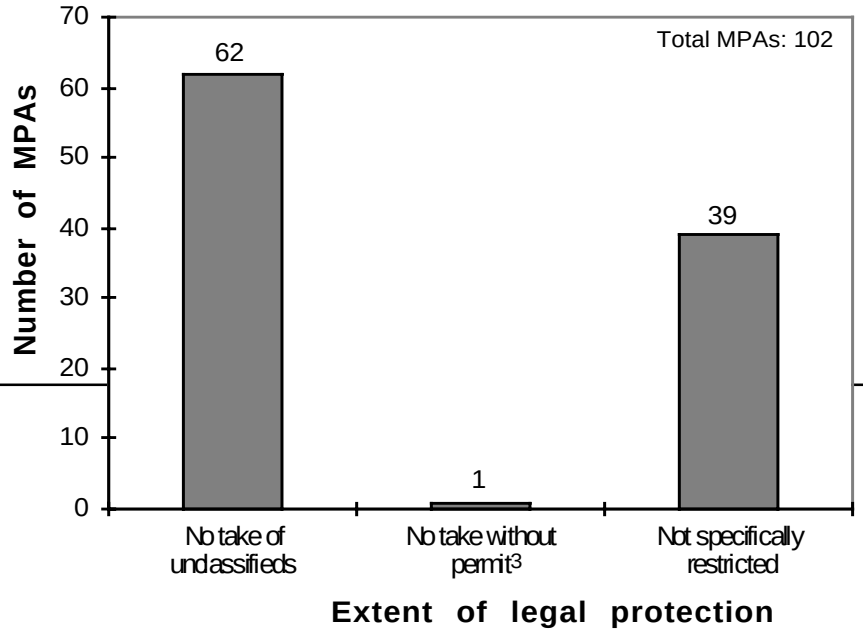
Protection of Unclassified Marine Species

Fished species represent only a small portion of the marine fish and invertebrates in Puget Sound. The remainder, termed "unclassified," represent thousands of species that have not been designated by WDFW as food fish, game fish, shellfish or in any special protected category. Unregulated harvest and collection of unclassified marine invertebrate species has increased sharply in the past decade, and is an issue of concern in Puget Sound (Kyte 1989; West 1997). Unclassified marine invertebrates known to be most commonly harvested include marine snails, shore crabs, polychaete worms and moon snails (West 1997).

Figure 5 shows the number of MPAs that prohibits, by law, the harvest or collection of unclassified marine species. Most notable is the high number of MPAs (60% of all sites) where the take of unclassified marine species is legally prohibited. The 60 State Parks with intertidal area represent the largest number of MPAs providing such legal protection. WSP&RC is the only state jurisdiction that has taken system-wide action to protect unclassified marine invertebrates, as well as algae, from harvest. A few additional MPAs, such as the Tongue Point Marine Life Sanctuary and the Edmonds Underwater Park, also provide legal prohibitions on the take of unclassified marine species through local ordinances.

Because unclassified marine invertebrates represent a species group for which WDFW has not yet undertaken comprehensive management, legal prohibition on collection of these resources is not found at any of the existing MPAs supported by WDFW harvest closures. However, proposed MPAs which WDFW may adopt in early 1998 may protect unclassified species.

Figure 5. Number of MPAs that Prohibit the Harvest or Collection of Unclassified[1] Marine Species by Law[2]



[1] Unclassified marine species are those that have not been designated by the Washington Department of Fish and Wildlife (WDFW) as foodfish or shellfish.

[2] Refers to harvest or collection restrictions specified in state laws or local ordinances. As used here, protected by "law" is not inclusive of management attempts to prohibit intertidal harvesting through proprietary access restrictions or other management measures.

[3] Represents San Juan County/Cypress Island Marine Biological Peserve, administered by the University of Washington's Friday Harbor Laboratories.

5.2.6 Regulatory vs. Proprietary Protection

Historically, most of Puget Sound's MPAs have evolved from the distinct and separate approaches of regulatory- or proprietary-based mechanisms. A regulatory approach to MPA establishment and management is based in specific laws, such as prohibitions on harvest, that place site-specific limits on human activities. A proprietary approach to MPA establishment is based on property ownership or lease of intertidal or subtidal areas.

Regulatory approaches have been used in the subtidal environment to provide area-specific harvest closures to manage fisheries, provide non-consumptive recreational opportunities, or facilitate scientific research. Intertidal sites have largely provided proprietary-based protections to marine environments, such as preventing habitat loss or degradation through acquisition and set-aside, limiting land-based human access or activities, and withdrawing certain public intertidal lands from availability for lease. In recent years, some MPAs have been planned and established through a more integrated approach, encompassing subtidal and intertidal marine environments, and combining both regulatory mechanisms for fish and shellfish harvest protection with proprietary protections (e.g., Titlow Beach Marine Preserve).

5.2.7 MPA Site Management

The nature and extent of management activity devoted to MPAs in Puget Sound is, not surprisingly, highly varied. Significant management differences exist among sites that range from set-aside areas with minimal supervision and management activity, to research reserves featuring continuous on-site management developments and activity. Given these differences, it is not possible to generally characterize many aspects of site management across the whole system. However, information on site management at individual MPAs is provided at Volume 2, MPA Site Profiles.

Many of the MPAs are observed as being actively managed on site, with, at a minimum, management staff present and regular maintenance and supervision. Examples of such sites include the Padilla Bay National Estuarine Research Reserve, the Nisqually and Dungeness National Wildlife Refuges, Edmonds Underwater Park, the State Park areas, and other sites.

A number of other protected areas, however, receive significantly less management attention. Examples of MPAs where site management attention is considered low include Natural Area Preserves at Dabob Bay, Kennedy Creek, Skookum Inlet, and Lummi Island; the San Juan Islands National Wildlife Refuge; and the Sund Rock Marine Preserve. While at some sites active management is not an objective or need, in most cases resource limitations have prevented implementation of originally intended or envisioned levels of management.

Management Plans

Management plans are important to MPAs. Consistent with the objectives of a protected area, management plans help to set the terms and conditions under which an area may be used or entered, and define staff tasks and other important logistical details. Without management plans, the significant effort devoted to designation of an MPA may lead to only limited commitment to long term management of the area (Gubbay 1995).

Consistent with the wide diversity of protected area types and objectives found within Puget Sound, the status of MPA management plans and planning is equally varied. Over 75% of the MPAs identified in this study are managed without the guidance of a completed site-specific management plan. For most of these sites, site management is guided by centralized planning or direction contained within geographically broader plans. However, approximately nine MPAs appear to have no management plan at all, specific or general, associated with the site.

Completed site-specific management plans do exist for approximately 16 MPAs. These plans vary greatly from those that are recently produced and are very detailed, to others that are older and lack much detail, especially concerning the marine environment. Additionally, new or revised site-specific management plans are being developed for at least six known sites plus a number of State Parks.

The diverse collection of management plans was reviewed for this study. A great number of plans emphasize resource management that is primarily focused on upland features and activities. This tends to be particularly true for many MPAs primarily comprised of uplands.

Enforcement and Supervision

Year-round on-site management presence can be found at approximately 71 sites. Remaining sites are visited by management staff on an infrequent basis, such as seasonally, a few times per year, or as incidents require. For those MPAs with harvest prohibitions in place, very few have developed site-specific enforcement programs. When interviewed, management staff and others familiar with particular MPAs most often characterized official enforcement presence and site supervision as light.

Educational approaches to achieve compliance are more commonly employed. Beach watch programs in place at MPAs such as Edmonds Underwater Park and Titlow Beach Marine Preserve provide site supervision and enforcement notification. The regular presence of volunteer divers and educational efforts of citizen park stewards at Edmonds have created strong peer pressure and an environmental ethic. As a result, the site is generally "self-policing."

Indirect or unofficial supervision is also common at many MPAs, whereby various parties keep watch, reporting violations and often approaching and educating potential violators. These parties include local residents, volunteers, researchers, maintenance staff, and others, but they are usually not responsible for site supervision or enforcement.

5.3 Summary Remarks

This section has commented on the complex institutional framework supporting MPAs in Puget Sound. It is observed that the existing "system" is fragmented and complex, generally confusing, without guiding MPA policy, and has resulted in mostly independently developed MPAs. However, this complex system does provide agencies and organizations with a wide diversity of marine area protection mechanisms and tools to establish MPAs. This section also presented a number of system-wide views and evaluations concerning the types, categories, distribution, size, protection levels and various management characteristics of Puget Sound MPAs. The collection of sites are seen as highly variable for most of these observation points.

The next section recaps main points of the report, recommends additional research for expanding and improving an MPA inventory, and comments on the application of information collected in this study.